REMARKS

Claims 1-4, 6-16, 23-25, and 27-33 have been rejected under 35 USC 103() as being unpatentable over SU 1685534 in view of Sadeghi et al.; and regarding Claims 17-22 further in view of Luft et al.; and regarding Claims 8,9, and 29-31 over Sadeghi et al. alone. These rejections are not traversed.

Claims 1-4,6,7,10-16,23-25,27-28,32 and 33 have been rejected under 35 USC 103(a) as being unpatentable over Sadeghi et al. in view of Everett et al. This rejection is respectfully traversed.

The Examiner holds that Sadeghi discloses all of Applicants' claimed steps including "inherently forming oxygen bubbles between said bitumen and said sand by decomposing a portion of said benzoyl peroxide therein;...however, Sadeghi et al. fails to disclose using **hydrogen peroxide** instead of **benzoyl peroxide**..."

The Examiner further holds that "Everett et al. teaches cleaning soil contaminated with oil which includes adding an aqueous **hydrogen peroxide** solution to the soil to form an aqueous slurry that includes either **benzoyl peroxide or hydrogen peroxide**. (claims 14) Therefore, since Sadeghi et al. and Everett et al. disclose similar processes, it is considered that **it would have been obvious...for Sadeghi et al to have used hydrogen peroxide instead of benzoyl peroxide...**"

Applicants note that previously Claims 1-3,12-16,23-25,27-28,32 and 33 were rejected under 35 USC 102(b) as being anticipated by Sadeghi et al. Sadeghi et al. discloses to use benzoyl peroxide in very small concentrations as a free radical initiator. Applicants amended their claims to claim only inorganic peroxides (Claim 1), such as hydrogen peroxide and sodium peroxide (Claim 10), clearly distinguishing Applicants'

claims from the disclosure of Sadeghi et al.

In the present Office Action, the Examiner grants that Applicants' arguments are persuasive and withdraws the rejections under USC 35 102(b), but then again rejects the same claims under 35 USC 103(a) by citing Sadeghi et al. in view of Everett et al. Applicants respond that this rejection also is not supported and should be withdrawn, for the following reasons.

First, regarding Sadeghi et al., Applicants submit that the Examiner has picked and chosen through the disclosure of Sadeghi and has ignored the substance of Sadeghi's invention which is very different from Applicants' invention and does not anticipate Applicants' invention in any way.

Sadeghi's invention is directed to **treatment of tar sands by an intense ultrasonic source in an aqueous slurry** to free bitumen globules therefrom, and **does not require a peroxide to carry out the method**. Sadeghi states (column 3 lines 60-68: "...the invention separates bitumen from tar sands, utilizing a separation agent formed by reacting tar sands with an inorganic base...When the solution is subjected to ultrasonic energy, **the lighter non-polar hydrocarbon fraction of the bitumen progressively separates from the sand particles and rises to the surface**." The preferred inorganic bases are sodium silicate and sodium carbonate. **The reaction proceeds by generation of free radicals that attack bitumen in the organic phase by ultrasonic cavitation**. Organic **peroxides such as benzoyl peroxide are disclosed to be free-radical generators** and thus are process accelerants.

The **peroxides are used by Sadeghi et al. in minute amounts**, e.g., 10 milligrams of benzoyl peroxide in 600 ml of water and 100 grams of tar sands. Thus, as disclosed in Sadeghi at column 19 lines 17-26, **the weight percent of benzoyl peroxide to water is 0.000017** If a molar equivalent of **hydrogen peroxide** (Molecular Weight = 34) were used, as suggested by the Examiner,

instead of benzoyl peroxide (Molecular Weight = 242), the **weight percent of hydrogen peroxide to water would be 0.0000023**.

Sadeghi demonstrates conclusively (column 18 line 67 to Column 21 line 29) that the process proceeds via **free-radical attack** on the inorganic base which then reacts in the organic phase with the bitumen. **The free radicals are generated by intense ultrasonic insonation; no reaction occurs in the absence of such insonation**. Sadeghi notes that addition of free-radical initiators speeds the process and cites benzoyl peroxide and azoisobutyronitrite as "representative agents" although **free-radical initiators are not a requirement to perform the principal method of Sadeghi's invention.**

Sadeghi notes further that "**preferred materials are soluble in the organic phase**" as would be necessary for reactions proceeding by free-radical addition, as is well known in the art of free-radical organic chemistry. **Sadeghi does not suggest to use any inorganic peroxide, as would be preferentially and highly soluble in aqueous solution, and in fact teaches away from use of such materials which are substantially insoluble in the organic phase. Only the Examiner suggests, in hindsight, to use an inorganic peroxide in the process of Sadeghi et al.**

Second, the Examiner holds that Everett teaches cleaning soil contaminated with oil which includes **adding an aqueous hydrogen peroxide solution or benzoyl peroxide to the soil to form an aqueous slurry that includes either benzoyl peroxide or hydrogen peroxide**. Therefore, since Sadeghi and Everett disclose similar processes, the Examiner holds that **it would have been obvious to use hydrogen peroxide instead of benzoyl peroxide in the invention of Sadeghi et al.**

The Examiner "does not feel that the processes of Sadeghi et al. and Everett et al. are entirely different from the Applicants' claimed process. Furthermore, **since Everett et al. teaches the use of hydrogen peroxide, Everett et al. does in fact**

teach the use of inorganic peroxide."

Regarding all of the above, and to the contrary of the essential elements of both Sadeghi et al. and Everett et al., Applicants' claimed invention:

a) does not require insonication, intense or otherwise, to carry out the process;

b) does not proceed by free-radical attack of hydroxyl radicals on hydrocarbons; the peroxide is included solely to penetrate the water layer in a tar sand grain and to then explode the grain by decomposing into a bubble of oxygen;

c) does require an inorganic peroxide to carry out the process (page 15, line 13);

d) does require a peroxide which is soluble in the water phase (page 15, line 8);

e) does require a weight percent of peroxide in water of between about 0.05 and 10.0 (page 15, lines 9-10; Claim 23); a peroxide weight percent of 0.0000023, or even 0.000017, as disclosed by Sadeghi et al., would be of no effect in Appplicants' claimed process, as claimed in amended Claim 1.

Further, as is well known to those of ordinary skill in the organic chemical arts, there is no inherent oxygen bubble formation during insonated free-radical generation by an organic free-radical generator such as benzoyl peroxide, as is erroneously held by the Examiner. In the Sadeghi and Everett processes, the oxy and hydroxy radicals are consumed in reaction with the organic (bitumen) substrate in the organic phase and do not form bubbles.

Applicants' invention, on the other hand, is directed to release of bitumen from tar sand grains by the mechanical action of oxygen bubble formation in the aqueous phase on the surface of the mineral particulate within the sand grain. The oxygen bubbles are formed by decomposition of an inorganic peroxide such as hydrogen peroxide or sodium peroxide which is highly soluble

in the aqueous phase and relatively insoluble in the organic phase.

In summary, Applicants submit that the processes of both Sadeghi and Everett rely on high-intensity ultrasonic insonation of an alkaline slurry containing a peroxide to produce free radicals which attack organic compounds in the slurry. As such, they neither disclose nor suggest Applicants' claimed invention.

Sadeghi insonates a slurry, which need not contain any peroxide, to produce free radicals that react with an inorganic base such as sodium silicate to produce a reactive intermediate that attacks bitumen.

Everett insonates a peroxide, either benzoyl peroxide or hydrogen peroxide, in an alkaline medium to produce free radicals that react with a polar-substituted hydrocarbon such as a polychlorinated biphenyl to produce a micellular surfactant.

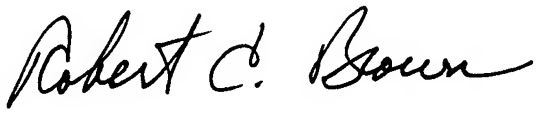
Applicants' process, on the other hand, as claimed in amended Claim 1, a) does not use ultrasonic insonation; b) does not rely on, or operate through, generation of free radicals; c) does not rely on an alkaline medium; d) does not attack or degrade organic compounds such as bitumen; and e) requires a peroxide concentration in the slurry between 100 and 600,000 times higher than the concentration taught by Sadeghi et al. Applicants submit, therefore, that the processes of Sadeghi and Everett are entirely different from Applicants' claimed process. **Taken either separately or together, the teachings of Sadeghi and Everett would not lead one of ordinary skill in the art to Applicants' claimed invention nor to the use of an inorganic peroxide at the concentrations required in the method of Applicants' claimed invention.**

For these reasons, Applicants respectfully submit that the rejection of Claims 1-4,6,7,10-16,23-25,27-28,32, and 33 under 35 USC 103(a) as being unpatentable over Sadeghi et al. in view of Everett et al. is not supported and should be withdrawn.

Applicants respectfully request that the remarks presented herein be entered into the case and that the remaining claims be passed to Allowance.

A check for $60.00 is attached for a one-month extension of time for this response. Applicants claim small entity status.

Respectfully submitted,



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